



Space Radio for Windows

Tony Monteiro, AA2TX

AMSAT Space Symposium, 2008

ARISS School Contact Program

- Scheduled contact with ISS
- About 370 contacts since Dec 2000
- Great experience
- 160,000 schools in USA
- Any way to expand the scope of the ARISS experience?

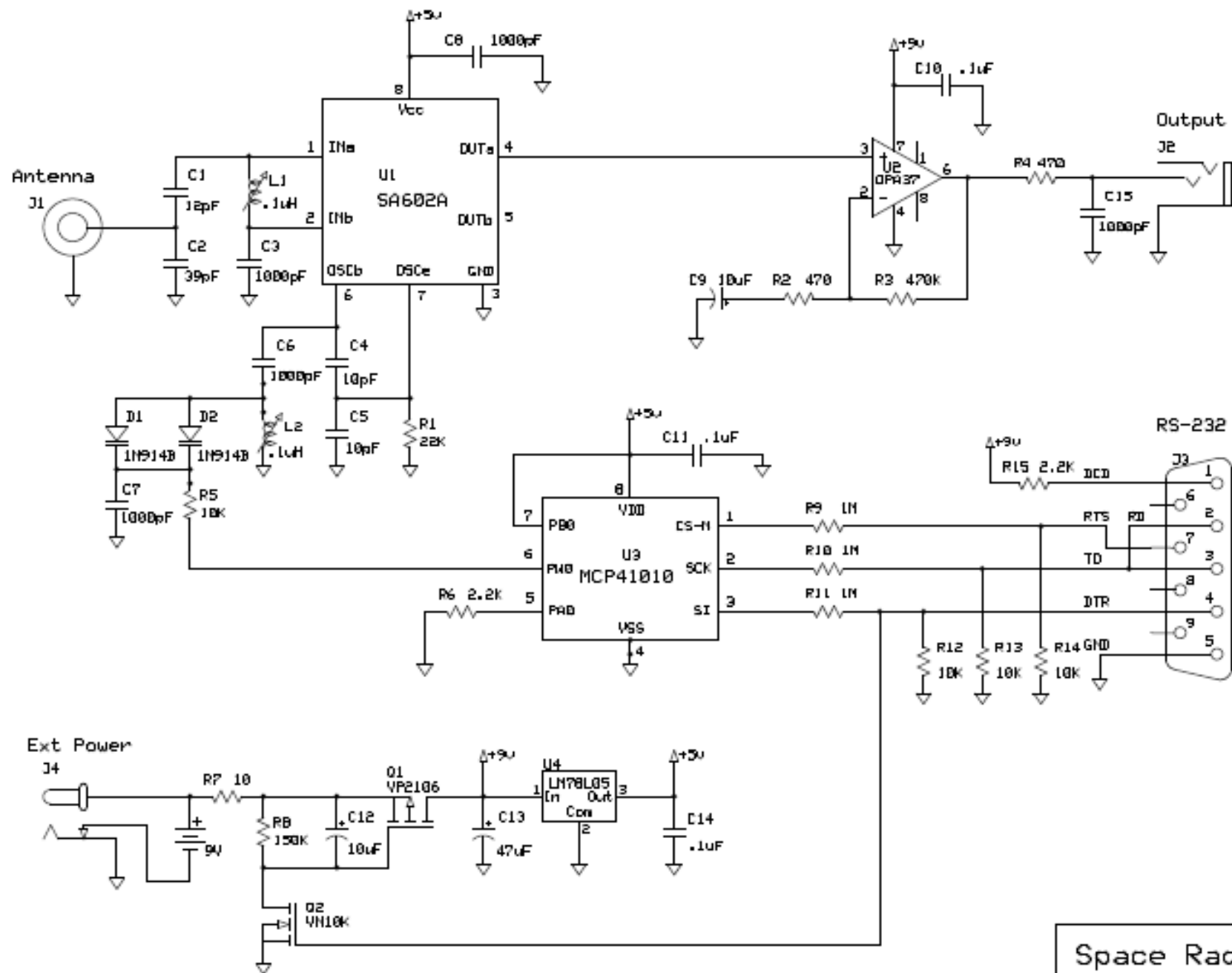
Everyone Can Listen...

- Simple radio to receive ISS
- Easy to build (by student)
- Cheap (\$25)
- Fun

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Space Radio for Windows

- Uses software radio technology to *reduce cost*
- Provides *sufficient* performance to receive ARISS voice transmissions
- Very simple circuit

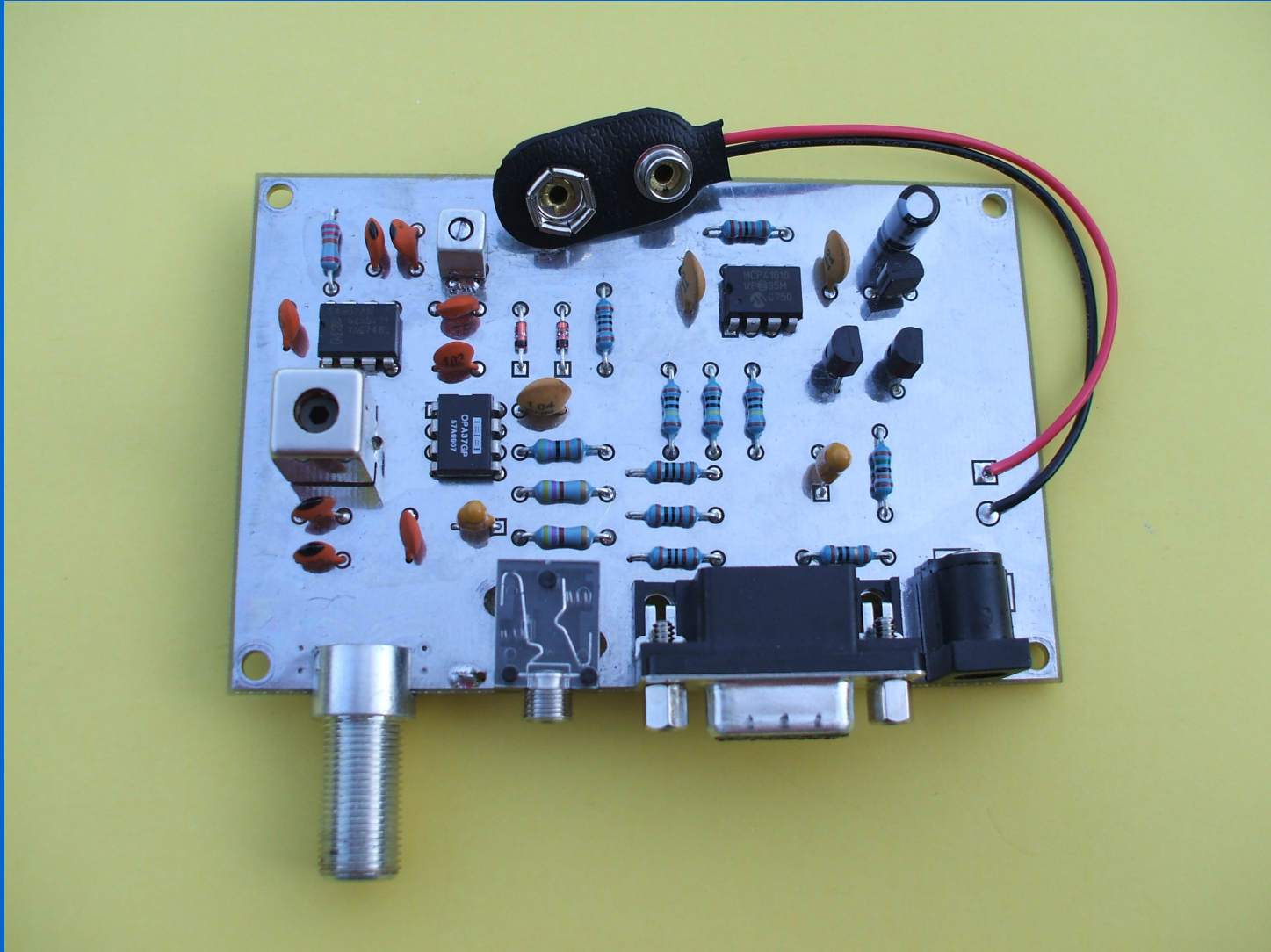


Space Radio

AA2TX

AUG-16-2008

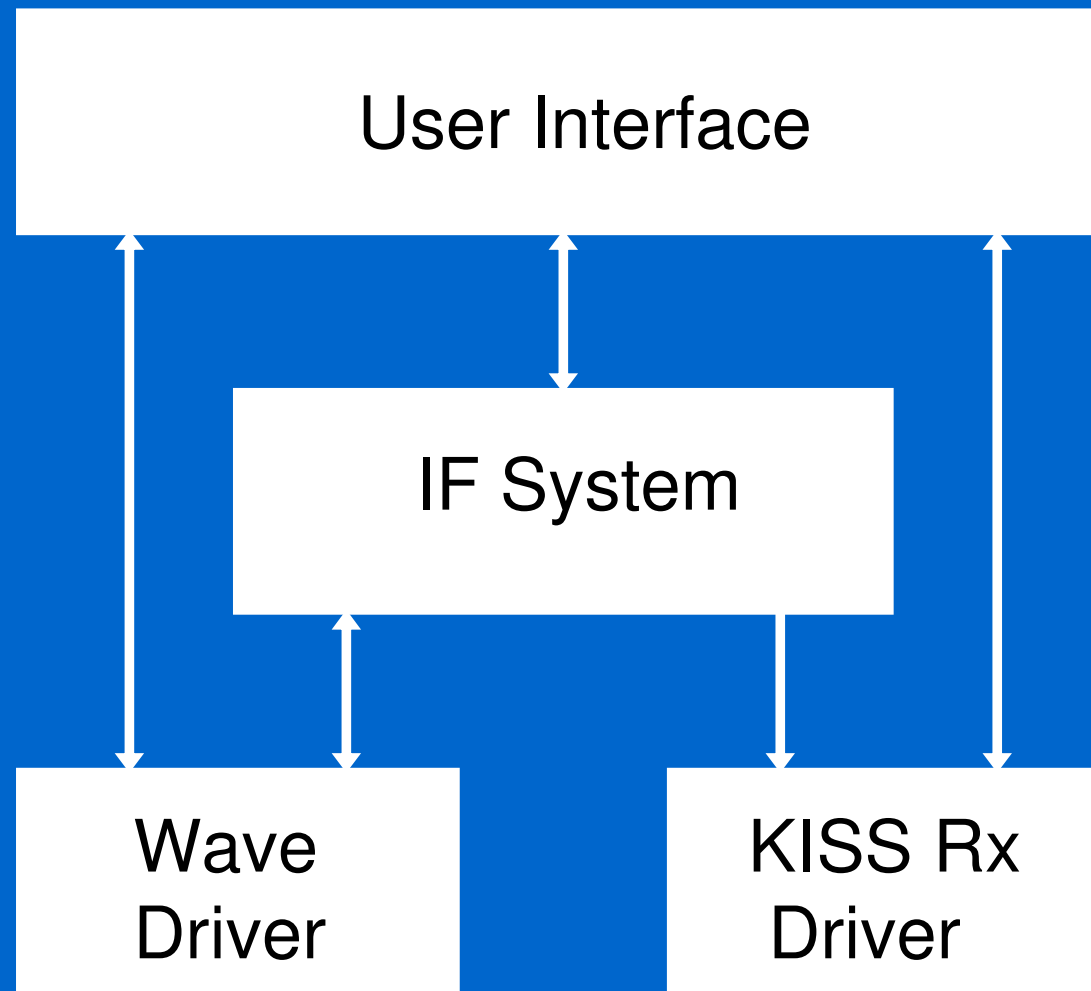
Space Radio Circuit Prototype

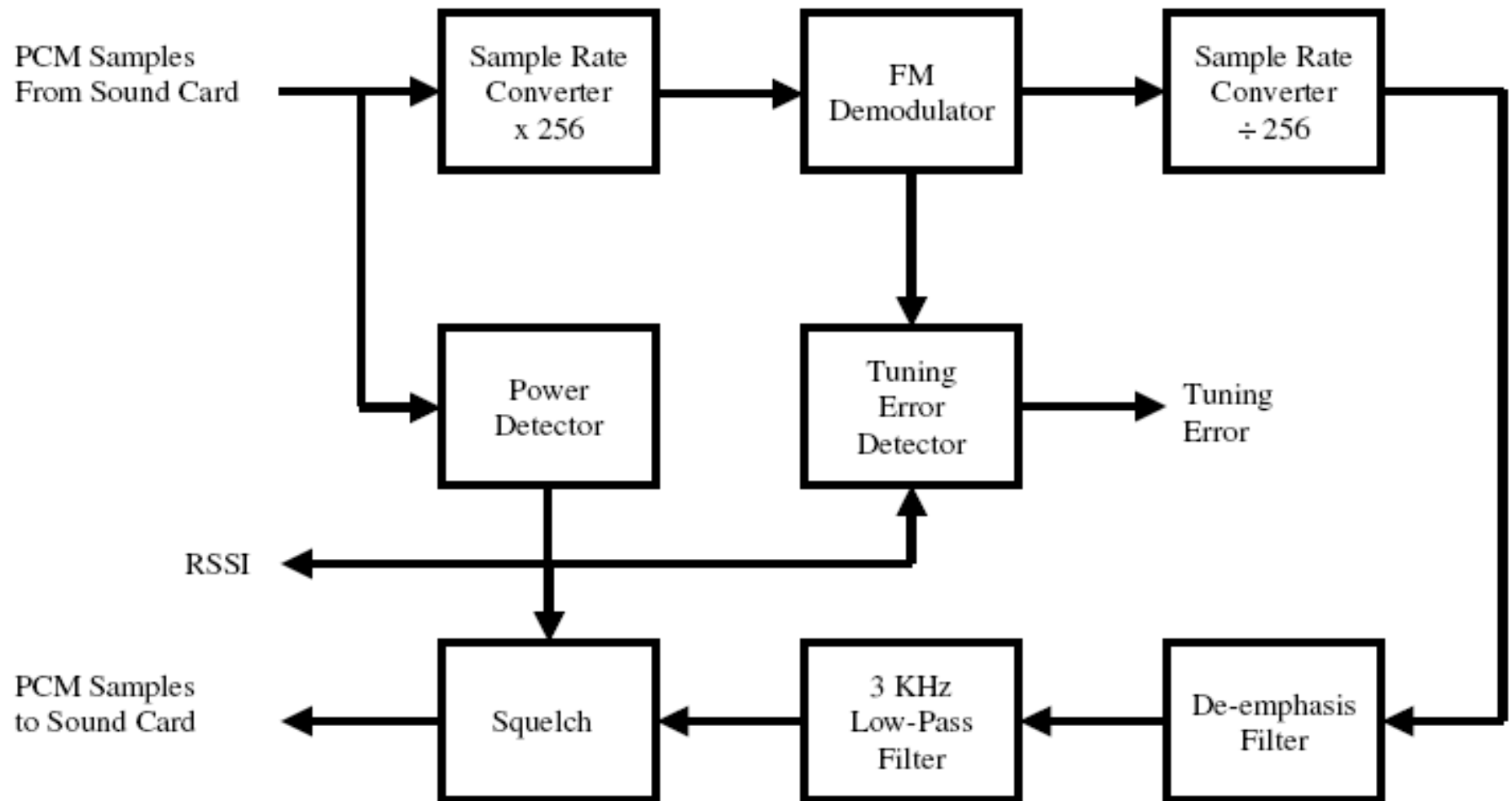


Space Radio Prototype

- Tunes 145.800 MHz for Voice
- Tunes 145.825 MHz for Packet
- 200 Hz tuning step size
- 1.8 μV (-104 dBm_0) for 12 dB SINAD
- Electronic parts cost \$14.05

Software Architecture





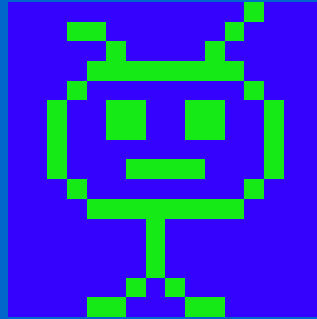
Digital Signal Processing

Space Radio Software

- 32-bit Windows program - runs under Windows 2000 or later
- Free and Open Source
- All SW tools are free
- Simple setup
- On 2.3 GHz PC uses 2% of CPU

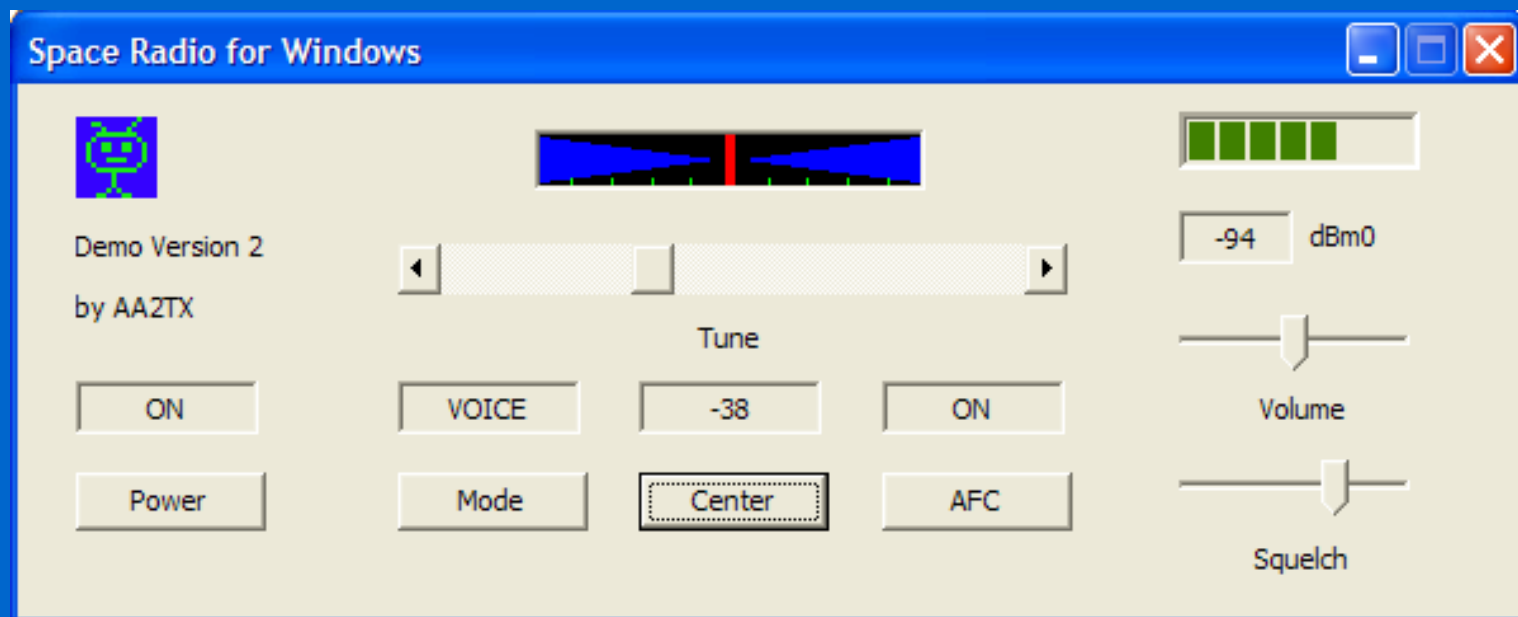
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Space Radio - Demo



Space Radio

Space Radio Front Panel



On the Air

- **August 13, 2008 ARISS school contact
Town of Berkeley Heights, NJ,
Summer Playground Camp**
- **Greg Chamitoff, Sergei Volkov on ISS**
- **Omni-directional antenna (Lindenblad)
with 200' coax - no preamp**

ARISS Q&A - Sergei Volkov



- Beatrice asks “Have you done a spacewalk, and what is it like?” 

ARISS Q&A – Greg Chamitoff



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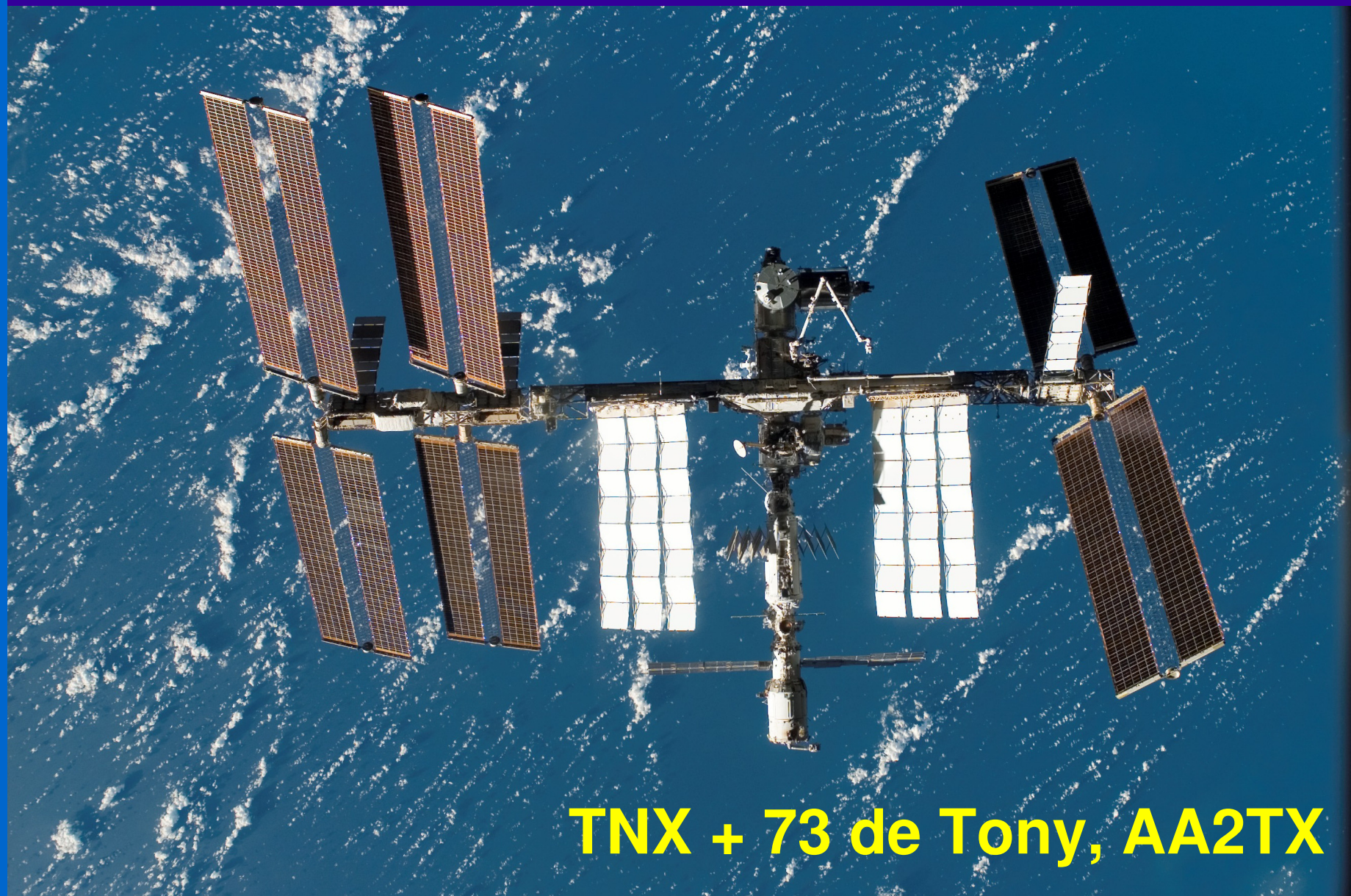
- I've heard that Jeff Williams likes spicy foods in space. Do you have the same experience? 🗣️
- Can you see an eclipse from the Space Station? 🗣️

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Space Radio - Summary

- **Prototype demonstrates concept**
- **Intended to be thought provoking**
 - SSTV?
 - Packet?
 - Cubesats on 70cm?
- **Comments, suggestions, discussion welcome**

Space Radio for Windows



TNX + 73 de Tony, AA2TX